1st Cavalry Division's Effectiveness in Conducting Airmobile Operations during Operation Pegasus

A Monograph

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The Vietnam War saw an expanded use of helicopters, which developed the doctrine of airmobility into an effective means of conducting operations. Through rapid expansion and lessons learned, airmobility switched from utilization with small units to being able to conduct division level operations by 1968 due to the 1st Cavalry Division. 1st Cavalry Division's Operation Pegasus conducted an airmobile operation with over 30,000 soldiers transported via helicopter in fifteen days and readily defeated the enemy. What made 1st Cavalry Division effective in Operation Pegasus? Its unique mix of aircraft and infantry, the doctrine it employed, and the ability to execute a thoroughly developed standard operating procedure.

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Abstract

1st Cavalry Division's Effectiveness in Conducting Airmobile Operations during Operation Pegasus by, LTC Karl M. Wojtkun, 46 pages.

During the Vietnam War, the use of the helicopter as a means to maneuver an infantry force rapidly over restrictive terrain became common practice and enhanced the efforts of the US military to conduct combat operations in mountainous and jungle environments. As the war progressed, the capacity to conduct larger-scale airmobile operations advanced from simple company movements, to complex movements of entire divisions. From April 1 to April 15, 1968, 1st Cavalry Division successfully conducted Operation Pegasus which was the first such division level operation.

This monograph investigates why the 1st Cavalry Division was so effective in Operation Pegasus. It does so by examining the structure of the division and the development of airmobile doctrine used in the operation. It also examines the assisting standard operating procedures.

As a result of the division's integral helicopters, it was capable of transporting itself effectively in combat. The aviation units were fully capable of continuously moving each of the brigades within the division against an enemy force. The methods to successfully maneuver in this manner resulted of stateside testing and early war experiences that together combined into one battle tested doctrine. As the division gained experience in Vietnam, the repetitive conduct of airmobile operations built effectiveness through the use of detailed and complete standard operating procedures. The rapid success derived of these efforts culminated in division level maneuver demonstrated during Operation Pegasus.

Contents

Figures

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Introduction

As a morning fog reluctantly gave way to a low gray haze on April 1, 1968, the sound of over four hundred helicopters coming to life pierced the mystic calm that shrouded the mountainous jungles of Vietnam. Despite a vigorous and largely successful US military effort to defeat North Vietnamese forces during the 1968 Tet Offensive, thousands of US Marines found themselves locked and threatened behind a siege at Khe Sanh. The helicopter relief force belonged to the only unit of its kind, the 1st Cavalry Division and this was the largest helicopter assault in history.[1] For six days leading up to the assault, OH-6 Cayuse scout helicopters and AH-1G Cobra attack helicopters from the cavalry scoured the area at low altitude, collected intelligence, located possible landing zones, and destroyed enemy anti-aircraft guns. High-flying heavy bombers from the Air Force, such as the iconic B-52 Stratofortress, bombed the area mercilessly. In some cases, special bombs called "daisy cutters" packed with thousands of pounds of explosives, ripped holes in the dense jungle hundreds of feet wide in order to create room for helicopters to land.[2] As the division's assault commenced, artillery shells exploded in landing zones where hundreds of helicopter-borne American soldiers would land. As the artillery stopped, new AH-1G Cobra and older UH-1B Huey helicopter gunships poured rocket and machine gun fire into the freshly shattered trees of the jungle. When the troop carrying UH-1D Huey and the improved model UH-1H helicopters approached the landing zones, their door gunners poured machine gun fire into the broken trees surrounding them. As they landed, soldiers scrambled off in order to secure the perimeter as quickly as possible. Between the perfectly sequenced artillery fire, helicopter gunship rockets, and landing helicopter's machine guns, possible enemy positions

[1] Shelby L. Stanton, *Anatomy of a Division: The 1st Cav in Vietnam* (Novato, CA: Presidio Press, 1987), 136.

[2] 1st Cavalry Division (Airmobile), Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear (Washington, DC: Department of the Army, 1968), paragraph 7.

around the landing zones received no reprieve before the landing helicopter-borne soldiers jumped out of their helicopters. With the landing zones secured, commanders quickly made the decision to call up heavy equipment that was too vulnerable to bring in with the first high risk waves of soldiers. Large CH-47 Chinooks with their twin rotor systems and the behemoth dragonfly-like CH-54 Sky Cranes, carried beneath them heavy artillery pieces too big for the smaller UH-1 Hueys to carry. Ammunition for the guns, water, bulldozers, sandbags, and other combat essential items rapidly arrived via helicopter. Within hours, the landing zones resembled a small fortress.[3] Soldiers were patrolling out into the adjacent jungle to expand the zone of control, to push enemy forces from the area, and to march towards Khe Sanh to free the Marines from their siege.[4]

The sequence of events that started on April 1 and ended April 15, 1968 were together called Operation Pegasus; the war's largest helicopter assault. At the end of the first day of the operation, 1st Cavalry Division had transported one third of its 15,000 soldiers into two areas named landing zone Mike and landing zone Cates, nine kilometers east of Khe Sanh. The unit controlling this force was the division's 3rd Brigade commanded by Colonel Hubert Campbell. On the third day of the operation, Colonel Joseph McDonough's 2nd Brigade with its third of the division's soldiers, flew beyond the recently secured areas to new landing zones deeper into enemy territory. Inching closer to the Marines, 2nd Brigade's landing zone Thor and landing zone Tom where approximately six kilometers east of Khe Sanh. On the fifth day of the operation Colonel John Stannard's 1st Brigade, with the last third of the division's soldiers, assaulted into landing zone Snake and Snapper, five kilometers west of Khe Sanh. With Khe Sanh having

[3] 31st Military History Detachment, *Historical Study 3-68 "Operation Pegasus"* (Vietnam: HQ Provisional Corps Vietnam, 1968), 30.

[4] Story created by Author, derived from events found in 1st Cavalry Division (Airmobile), Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, 7-8; and John Galvin *Air Assault: the development of airmobile warfare* (New York, NY: Hawthorn Books, 1969), 306-308.

soldiers and marines to the east and west of the base, conditions were set for a final push to break the outposts' siege. On April 8, 1968, only seven days after the operation began, soldiers of 1st Cavalry Division linked up with the Marines at Khe Sanh to end the siege.[5] Throughout the fifteen-day operation, all of the 15,000 soldiers assigned to the division were committed to battle and transported by helicopters. In support, a mix of 15,000 soldiers from the Army of the Republic of Vietnam and the United States Marine Corps, conducted smaller-scale operations via helicopter assaults controlled by 1st Cavalry Division.[6]

Although Operation Pegasus was notable by itself given its sheer size, it owed much of its success to lessons learned in previous smaller-scale helicopter operations and stateside testing. In the early part of the Korean War, the metal tubed and plastic bubbled H-13 Sioux helicopters became legendary for their ability to move wounded soldiers from the front lines to hospital. Later in the Korean War, experiments moving small units of about one hundred soldiers around a mountainous battlefield via helicopter highlighted the potential of its use.[7] As the Korean War closed, these experiences created sparks for future ideas on the movement of soldiers by helicopter. Following the Korean War, it was common for helicopters to transport soldiers from locations not easily accessible by foot or vehicle, such as hilltops and mountain ridgelines. Seeing the possible advantages of helicopters in mountainous and jungle-filled Vietnam, the US Army quickly developed, tested, and codified new techniques to employ. In 1962, after hearing from advisors and generals about the possibilities of helicopter support, Secretary of Defense Robert McNamara directed General Hamilton Howze from the 18th Airborne Corps to test the use of aircraft as an infantry weapon. From 1963 to 1965, the 11th Airborne Division tested helicopters

[5] 1st Cavalry Division(Airmobile), Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, 8.a.1.(i).

[6] John R. Tolson, *Airmobility* (Washington DC: Department of the Army, 1973), 180.

[7] Ibid., 4.

as part of an infantry division team with experiments and mock battles in areas spanning from Georgia to North Carolina. As information cumulated from test exercises, it blended with data from units already using helicopters in combat operations in Vietnam. Key findings in these tests and experiences indicated that helicopters were more successful if fully integrated with their infantry units under one command and in enough quantity as to lift at least one third of the unit in a single movement.[8] New helicopter engines and designs, such as those found in the then, recently designed UH-1 Huey and CH-47 Chinook helicopters, brought greater capability to support the infantry with vastly improved lifting capacity. The evidence also suggested integrating helicopters and infantry into one unit. Reports indicated that the Army should utilize the most modern helicopter designs possible to generate enough capability to move large formations of soldiers in a single movement. Airmobility, a term developed to describe this new pairing of helicopter and infantry, became a concept to fight together as one team and the testing of the concept created new tactics to defeat an enemy force. Some of the new concepts involved making all aspects of an airmobile unit's structure moveable by helicopter, allowing rapid battlefield mobility, and improving capability. The final testing of the experimental division was so successful, that in July 1965 the US Army began the process of turning 11th Airborne Division that only contained one full brigade, into a fully outfitted airmobile division; renamed 1st Cavalry Division. It then deployed immediately to Vietnam.[9] The lineage of the cavalry name likened the new helicopter to the horse. There was now a new way to ride into battle.

As it moved to the war zone in 1965, 1st Cavalry Division was a one of kind unit because of its many helicopters and unique command structure. Just like other divisions in the mid-1960s, the 1st Cavalry Division had approximately 15,000 soldiers, organized into three brigades. The

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[8] Frank T. Taddonio, *What Can We Learn from a War We Lost? The Relevance of the Vietnam Experience for Today's Assault Helicopter Doctrine,* Monograph (US Army Command and General Staff College, 1985), 6-10.

[9] Tolson, *Airmobility,* 61.

division only had equipment that was light enough to move by helicopter. Heavy trucks and equipment that were normal to units this size were not in the new airmobile division. To make up for the loss of trucks and heavy equipment, the Army assigned more helicopters and a special aviation group that gave the division more than four hundred aircraft. It now had four times more helicopters than other Army divisions. As a result of its limited integral ground transportation, infantry forces were heavily reliant on a close working relationship with the division's aviation group with whom they fought as one team.[10]

1st Cavalry Division was extremely mobile which made it a key asset for a corps commander to have in the jungle filled mountainous terrain of Vietnam. Its helicopters made it just like the cavalry of old, capable of conducting reconnaissance and security missions much more rapidly than foot-bound infantrymen.[11] When the North Vietnamese Tet offensive required the response of all division-size American and South Vietnamese combat forces, only one could move with the rapidity required to support the besieged Marine division at Khe Sanh: the highly mobile 1st Cavalry Division. Additionally, since President Johnson refused to send additional forces to meet the increased threat, there was no relief force possible from the United States.[12]

Lieutenant General John Tolson, the division commander, drew-up initial plans to relieve the Marines at Khe Sanh on January 25, 1968.[13] When he briefed the plans to General Robert Cushman, III Marine Amphibious Force Commander, he recommended a quick air movement of his division from the Hue area to a staging area near Khe Sanh. He would then take command of

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[10] US Army Tactical Mobility Requirements Board, *Final Report* (Fort Belvoir, VA: Combat Developments Command, 1962), 18.

[11] Leon Bieri, *An Analysis of the Current Concept for Employment of the Airmobile Division Against Insurgent Forces in an Underdeveloped Area*, Monograph (US Army Command and General Staff College, 1966), 13.

[12] John Prados and Ray W. Stubbe, *Valley of Decision: The Siege of Khe Sanh* (Boston, MA: Houghton Mifflin Company, 1991), 418-419.

[13] Ibid., 417.

the 15,000 marines and South Vietnamese soldiers already in the Khe Sanh area. They would draw on three-year's of smaller-scale fighting with helicopters in Vietnam and for the first time deploy all three of the 1st Cavalry Division's brigades in one airmobile operation. To do this, Tolson developed a simple three-part plan. First, he needed to set-up logistics and operating bases for his helicopters within reach of Khe Sanh. Then he proposed attacking the enemy via leapfrogging forces along the sole mountain road leading towards Khe Sanh. Finally, he sought to reconsolidate his forces and prepare them for a move of seventy-five miles to the south, in order execute a subsequent operation in the A Shau Valley.[14]

The fifteen-day period of Operation Pegasus displayed the value of airmobility, as it conducted 115 separate air assault operations, moved 47,496 soldiers and 8,904 tons of supplies in a single unified combat effort.[15] Even more impressive was that the division's combat units moved to the Khe Sanh area only days prior to the assault and left as rapidly as they had arrived in order to conduct operations in another region over seventy-five miles away. Airmobility proved not only to be an asset for singular battles, but also an asset to Generals who sought to combine successive battles into a campaign for victory over North Vietnam. Why was the 1st Cavalry Division so effective in Operation Pegasus?

The answer to the effectiveness 1st Cavalry Division displayed during this operation could be explained by an enemy that became quickly overwhelmed and was forced to withdraw from the battlefield.[16] It could also be because of a highly competent commander using modern helicopter technology against a foe not equipped with a similar capability. However, the enemy had been withdrawing after the Tet offensive in many areas of South Vietnam and highly

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[14] Stanton, 135.

[15] 1st Cavalry Division (Airmobile), Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, tab E.

[16] Headquarters Provisional Corps Vietnam, *Combat Operations After Action Report Operation Pegasus* (Washington, DC: Department of the Army, 1968), 10.

successful commanders from all regions in South Vietnam were able to exploit this with their own sets of modern helicopters. They just could not achieve the amount of success that 1st Cavalry Division could with its unique capability. The reason 1st Cavalry Division was successful in Operation Pegasus was because of the very things that made it unique; its structure, effective doctrine, and thorough standard operating procedures.

The Structure of 1st Cavalry Division

The pilot took hold of the throttle and pressed the starter while his eyes scanned the gauges for signs of life from the engine. When it caught, the engine howled as it sucked in air and then compressed it through a series of turbines. A fuel mist mixed with the compressed air and an electric spark brought the engine to life. The howl turned to a roar as temperatures in the engine exceeded 600 degrees Celsius. The rotors made the familiar "whop whop" sound as they began to spin.[17] This pilot was flying a UH-1H Huey and its jet turbine engine gave his helicopter much more power than his old piston-driven flight school trainer. At the same time, hundreds of other helicopter pilots were starting their engines. He was part of a larger unit that was orchestrated into flights, or groupings of helicopters, designed to accomplish the task of picking up and moving infantry units on the battlefield. Other types of helicopters with the same turbine-type engines were also starting. AH-1G Huey Cobras with their narrow fuselage, bristling with rockets and guns, took off in teams with the mission to protect the infantry-laden Hueys and provide fire support to the troops once they hit the ground. Larger cargo helicopters, such as the CH-47 Chinooks and CH-54 Sky Cranes, made deeper sounds as their much larger engines started. They would group themselves into similar flights to accomplish the task of lifting heavy pieces of equipment and cargo required by the infantry after they had landed to deliver death and

[17] Technical Manual, *Operators Manual Army Model UH-1D H Helicopter* (Washington, DC: Government Printing Office, 1969), 3-5 and 7-4.

destruction on the battlefield. While the pilots were individually responsible for managing their state of the art helicopters, they acted in unison and as part of unique units. These units gave 1st Cavalry Division the ability to move a fighting force like no other division in the Army. Throughout Operation Pegasus, the scene of hundreds of aircraft starting and joining in flights repeated itself daily. These special units gave the division life as an effective fighting force.[18]

The structure of the division's helicopters was a result of three key factors. First, helicopter technology in 1968 had given the division access to aircraft with vast improvements over their predecessors. The UH-1H Huey, the AH-1G Cobra, the CH-47 Chinook, and the CH-54 Sky Crane all possessed the latest advancements in technology and were prolific within the division. Second, the organization of these helicopters into the Army's only aviation group dedicated to a single division proved to be a lethal and effective combination. Typical Army divisions of the day only possessed one battalion of helicopters or one quarter of the approximately 434 aircraft operated by 1st Cavalry Division in 1968.[19] Third, this vast array of aircraft gave the division the ability to move large numbers of soldiers and cargo under the cover of fire support from their integral gunships. 1st Cavalry Division was far more effective in its combat mission because of aircraft technology, aircraft organization, and the array of aircraft-combined capability.

Helicopter technology produced improved designs, and for the division, these new designs enabled it to carry out its mission of moving soldiers and the equipment they required to fight and survive. The UH-1H Huey improved effectiveness for the division because it combined the technology of the jet-age with the helicopter. It delivered cargo and soldiers to the battlefield in a more efficient manner than any other previous utility helicopter. In 1968, during the siege of

[18] Story created by Author, derived from procedures found in Technical Manual, 7-4; 1st Cavalry Division, 7-8.

[19] US Army Tactical Mobility Requirements Board, 4-5, 35.

Khe Sanh, the Huey was the predominant aircraft within the 1st Cavalry Division.[20] Its primary mission was to carry troops to the battlefield. It was also capable of providing cargo delivery to remote areas or casualty evacuation in the air ambulance role. While the division still operated older versions of the helicopter, newer models replaced them as fast as production and delivery dates from factories allowed.[21] In the sequence of air assaults made by the division in Operation Pegasus, the Huey was the predominant aircraft used in the first waves of the attack. The "H" model was an improved variation of the original aircraft that saw its first flight in 1956. Under optimal conditions the "H" model's improved engine was capable of lifting eleven soldiers or 4,000 pounds of cargo; a vast improvement over other helicopters of the 1960s era.[22] What made the Huey better than its predecessors such as the H-21 Shawnee and H-37 Mojave, was its turbine engine. The H-21 and H-37 helicopters used radial engines that provided a much lower and less favorable power to weight ratio.[23] Because of this, the smaller Huey was able to out-lift its older siblings. This was possible because of extensive use of lightweight materials and the use of the lighter turbine engine in design and construction. The Huey brought the helicopter into the age of the jet engine.

The small size of the new helicopter, and improved carrying capacity, presented great tactical advantages. It enabled the aircraft to be far more maneuverable while on final approach to a landing zone in combat and thus a smaller and harder to hit target for the enemy. Its smaller size meant that more of them could land in a given area. This allowed more soldiers to concentrate on

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[20] US Army Tactical Mobility Requirements Board, 27.

[21] Tolson, *Airmobility*, 33.

[22] Technical Manual, 6-31 and 7-10.

[23] "CH-21 Shawnee/Vertol 44 Helicopter," Boeing, accessed March 23, 2016, www.boeing.com/history/products/ch-21-shawnee-vertol-44-helicopter.page; and "S-56/HR2S-1/H-37 Helicopter," sikorskyarchives.com, last modified April 13, 2013, accessed March 23, 2016, www.sikorskyarchives.com/S+56%20HR2S-1H-37.php.

a landing zone in a single lift, a common term for a flight of aircraft conducting a turn of movement from the pickup zone to the landing zone. With a faster buildup of combat power on the landing zone, ground forces faced less of a threat from the enemy, and were more effective at repulsing an attack in the early stages of an operation when not all of the lifts had landed. The Huey was the latest in helicopter technology, and an efficient addition to the division's arsenal. [24]

Early in the conflict, the enemy realized that helicopters were vulnerable as they slowed to approach a landing zone. The North Vietnamese and Viet Cong learned to position anti-aircraft weaponry near possible landing zones to shoot down approaching helicopters. [25] While the Huey was more maneuverable during this phase of flight than its predecessors, it still could not defeat or destroy the enemy anti-aircraft guns by itself.[26] A gunship-type helicopter was required to defeat this threat.[27] The initial answer was to modify existing Hueys by retrofitting them with extra weapons systems, such as rockets and larger machine guns. This was merely a temporary fix because adding guns and rocket launchers to the Huey reduced its speed to the point that it could not keep pace with its non-modified troop carrying sister ships.[28] The extra drag caused by the weapon systems dropped the maximum speed of these Gunship Hueys by ten knots. They simply could not escort a formation of Hueys. They would have had to takeoff ahead of time to meet the troop carriers at the landing zone to provide cover while they landed.[29] Given the need

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[24] "Bell UH-1H Iroquois 'Huey' Smokey III," Smithsonian National Air and Space Museum, accessed March 23, 2016, www.airandspace.si.edu/collections/artifact.cfm?object= nasm_ A19960005000.

[25] Headquarters US Army Section Military Assistance Command Vietnam, *Lessons Learned 32: Eagle Flight Operations* (Vietnam: Headquarters Military Assistance Command Vietnam), 6.

[26] James Bradin, *From Hot Air to Hellfire: The History of Army Attack Aviation* (Novato, CA: Presidio Press, 1994),113-121.

[27] Ibid., 113.

[28] Tolson, *Airmobility,* 33.

[29] Bradin, 121.

to takeoff at separate times, or to follow a shorter route to the landing zone, the troop carrying, or slick Hueys, were unescorted and vulnerable to attack enroute to the landing zone.

Seeing that there was a need for a fast escort gunship, Bell Helicopter developed the AH-1G Cobra using many of the same parts as the Huey, saving design time while rushing it into service. Designed as a gunship from the beginning, the helicopter was sleek and narrow to ensure it had an aerodynamic quality; even the rivets on the skin of the aircraft had flattened surfaces to reduce the effects of drag. When laden with guns, rockets, and missiles, it could keep pace with the troop carrying slicks from takeoff to landing. Its fuselage was a mere three feet seven inches wide and it mounted machine guns, rockets, and missiles as needed to attack a wide variety of enemy targets. The Cobra was prolific within the division by the time of Operation Pegasus, despite the fact that it had only flown its first combat mission some six months earlier.[30] Because of this, only two troop carrying Hueys were lost to enemy fire under Cobra escort during Operation Pegasus.[31] The AH-1G thus made the division more effective since it used its aircraft design and increased capability to protect other helicopters in all phases of the air assault.

The effectiveness of the airmobile division did not entirely rest on the troop carrying Huey or the Huey Gunships and Cobras that comprised its helicopter fleet; it was also in the capability brought by the division's heavy lift helicopters. The division's design called for movement of all of its supplies via helicopter. While the Huey brought a much greater increase in ability to support the movement with its turbine engine, the CH-47B Chinook and CH-54 Sky Crane used even larger turbine engines on airframes specifically designed to lift cargo and large bulky items. While sacrificing some maneuverability due to their larger size, these two helicopter designs maximized cargo handling capabilities and heavy lift. The large cabin size of the Chinook

[30] Ibid., 120-122.

[31] 1st Cavalry Division (Airmobile), Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, Tab E.

enabled pallets to be loaded via forklifts, speeding the loading and unloading of the aircraft. The Sky Crane, with its capability to lift heavy or bulky loads either in a modular mission specific container, or via a cable from its powerful hoist, also increased the efficiency of cargo movement. The Chinook provided almost three times the lift of the Huey, carrying up to 10,500 pounds of cargo, or thirty-three combat equipped soldiers. The Sky Crane could carry five times more than the Huey, with 20,000 pounds of cargo or sixty-seven combat equipped soldiers.[32] With few other combat units permanently assigned these aircraft in 1968, the 1st Cavalry Division was able to fully employ them to support logistical operations. As a result, the division was able to sustain its combat soldiers in extreme remote areas. During Operation Pegasus, the Chinook and Sky Crane helicopters delivered over 500 tons of cargo per day which enabled the entirety of the division to maintain continuous offensive operations.[33] They were key to the effective logistical support of the division.

While the technological advancement in helicopter development added capability, the unique organization of helicopters into units ensured the division was effective at airlifting soldiers in combat. This organizational structure was not just the result of placing technologically advanced helicopters together with infantry forces in one unit. It was the result of combat experience gained prior to the 1965 deployment of the division to Vietnam, coupled with testing during numerous wargame exercises in the United States between 1962 and 1965.

When it deployed to Vietnam, 1st Cavalry Division contained 434 aircraft, considerably more than the 103 normally assigned to a comparable division-size unit.[34] The aircraft were primarily broken down into three distinct units: the 11th Aviation Group under the command of

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[32] Field Manual (FM) 57-35, *Airmobile Operations* (Washington, DC: Government Printing Office, 1967), 112.

[33] 1st Cavalry Division (Airmobile), *The Air Cavalry Division 1 no. 2 July 1968* (Tokyo, Japan: Dai Nippon Printing Company, 1968), 9.

[34] John Galvin *Air Assault: the development of airmobile warfare* (New York, NY: Hawthorn Books, 1969), 287-288.

Colonel Joseph Gudo, 1st Squadron, 9th Cavalry under the command of Lieutenant Colonel Richard Diller, and the 1st Cavalry Divisional Artillery under command of Colonel William Wolfe. The 11th Aviation Group contained a headquarters company, a general aviation support company, two assault helicopter battalions, and one assault helicopter support battalion. The cavalry squadron contained one headquarters troop, three cavalry scout companies, and one attack helicopter company. 1st Cavalry Divisional Artillery, in addition to its normal compliment of 105-mm guns, also contained an aerial rocket battalion and an aero-scout company.[35]

While the majority of the division's aircraft resided primarily in the aviation units, eighty helicopters existed within the division's infantry brigades and maintenance support units to facilitate commander movements around the battlefield and to move critical repair parts.[36] Virtually every unit within the division had some sort of direct helicopter support. A benefit of having so many helicopters under the command of the division and its subordinate units was that it could tailor aviation and ground units for specific missions. It also increased effectiveness by enabling aviation units within its command to specialize in certain tasks. Units could concentrate on providing lift to soldiers and cargo, conducting reconnaissance, or conducting dedicated attack missions. Normal divisions in 1968 had only one aviation battalion that needed to conduct all aviation related tasks, giving it no chance to specialize in any one in particular. If a normal division required additional aviation assets beyond its single battalion of helicopters, it had to request support from units outside of its command structure. Since 1st Cavalry Division possessed enough helicopters to form specialized units and then organize them as needed to meet mission requirements, the efficiency of the division in combat operations improved in comparison

[35] US Army Tactical Mobility Requirements Board, 38.

[36] Ibid., 4.

to other similar sized units of the day.

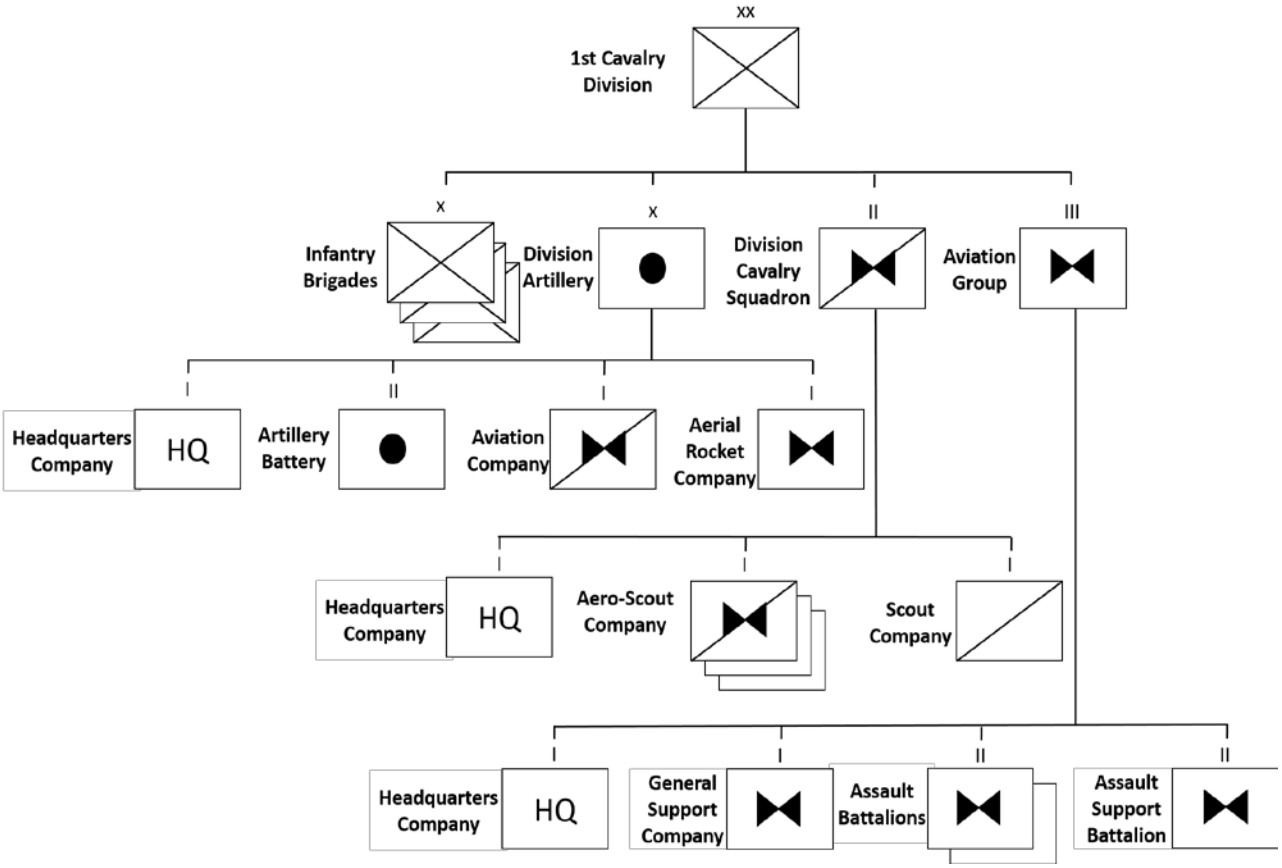

Figure 1. Major Aviation Units within of 1st Cavalry Division

Source: Created by author derived of information from Leon Bieri, *An Analysis of the Current Concept for Employment of the Airmobile Division Against Insurgent Forces in an Underdeveloped Area*, Monogrpah (US Army Command and General Staff College, 1966), 12; US Army Combat Developments Command, *Airmobile Division: TOE 67T* (Fort Belvoir, VA: 1965); and Shelby L. Stanton, *Anatomy of a Division The 1st Cav in Vietnam* (Novato, CA: Presidio Press, 1987), 253-259.

The 11th Aviation Group provided the division with the majority of helicopters responsible to lift soldiers from point to point on the battlefield. The two assault helicopter battalions within the 11th Aviation Group gave tactical mobility to the infantry brigades via sixty Huey helicopters. Each battalion contained three assault helicopter companies of twenty Hueys each. Both assault helicopter battalions had a weapons company with twelve UH-1B/C Huey

Gunships or AH-1G Cobras. In this configuration, a single assault helicopter battalion was capable of transporting a battalion of infantry in a single lift while providing Gunship escort during the assault. An additional twenty Hueys, thirty OH-6 Cayuse scout helicopters, and twelve OV-1 Mohawk airplanes supported the division effort from a separate general support company that typically conducted reconnaissance or radar and infrared scanning missions.[37] The assault battalions thus gave the division an effective means to lift its ground elements via specially designed and trained units. These teams could rapidly change in structure to meet the mission needs of the division.[38]

The assault support helicopter battalion ordinarily provided the division with capability to move its artillery, command posts, and supplies. It also moved all of the division's equipment that the lighter Hueys could not lift. Equipped with forty-six Chinooks, organized into three assault support helicopter companies, the assault support battalion could move two infantry battalions, or 150 tons of cargo in a single lift. Additionally, a single company of Chinooks could move a battery of artillery in a single lift. At the time of Operation Pegasus, the division also controlled four Sky Cranes that together were capable of lifting 268 Soldiers, or 80,000 pounds of cargo.[39] More importantly, these Sky Cranes were also capable of moving larger artillery pieces such as the 155-mm cannon. This allowed the division to employ heavier cannons that had greater range and greater explosive effect than the normally assigned 105-mm cannons.[40] The effectiveness of this assault support battalion gave the division the ability to move all of its equipment by air, to include bulky and heavy items like trucks and large cannons; a capability that did not exist in any

[37] Bieri, 34.

[38] Galvin, 296.

[39] FM 57-35, 112.

[40] Headquarters 1st Squadron 9th Cavalry 1st Cavalry Division, *Combat After Actions Report Operation Hooker I* (Vietnam: Headquarters 1st Squadron 9th Cavalry, 1966), 21-22.

other division in 1968.[41]

The division also contained a cavalry squadron equipped with numerous scout and attack aircraft that increased the division's effectiveness at seeing and shaping the battlefield prior to operations. It was the eyes and ears of the division. Equipped with both helicopters and infantry, the cavalry squadron would spot enemy forces by air and, as needed, conduct a thorough ground reconnaissance to find enemy forces in areas prior to major operations.[42] The squadron contained three aero-scout companies comprised of a scout platoon with ten OH-6 Cayuse scout helicopters, an assault platoon of five UH-1D/H Huey helicopters, and an attack helicopter company of ten UH-1B Huey Gunship or AH-1G Cobra attack helicopters. Also, in the same cavalry squadron was one company of cavalry scouts that routinely flew with the air cavalry companies to enhance the reconnaissance effort. Working together under one command structure, both air and ground scout elements became an efficient team capable of spotting enemy positions and then observing them or attacking them as needed to support the division's effort. Because the divisional cavalry squadron contained scout, attack, and lift aircraft operating in conjunction with a ground scout team, it was fully capable of operating independently and relied on no other unit to move it on or around the battlefield.[43]

Because of the division's need to move all of its equipment by helicopter, it normally only possessed relatively light artillery pieces, such as the 105-mm cannon. Lessons learned in the early years of Vietnam, and during stateside testing of the airmobile concept, found that during movement of helicopter forces, bigger caliber cannon artillery might be unavailable due to range or ability to lift. To compensate for the loss of artillery capability, gunships became an

[41] Bieri, 20.

[42] Ibid., 28.

[43] Ibid., 27-28.

integral part of the divisional artillery.[44] The division artillery thus consisted of three battalions of eighteen 105-mm cannons that used thirty-six gunships organized into three aerial rocket companies. The use of gunships flying forward to support soldiers on the ground and outside of normal artillery support, extended the range the division was able to achieve across the battlefield. Thus, the artillery brigade directed the employment of its gunships when cannon fire was not available. However, a limitation of this was that aerial fire support had limited capability in restrictive weather conditions, such as low clouds or when enemy air defenses were prevalent.[45] While the presence of the gunship did add to the effectiveness of the division, there were limitations to contend with.

Because of the grouping of these helicopters, the division's 11th Aviation Group was capable of moving one-third of the division by air; an entire infantry brigade in a single mission. It was able to transport not only the soldiers, but their equipment as well. Heavy-lift helicopters could even move a battery of six 105-mm cannons with the assault and conduct resupply operations as needed after the assault had commenced. Since the battalions were broken down to company-size elements, commanders could also temporarily create hybrid units of mixed companies to support a particular mission.[46] Since the helicopters all originated within the same aviation group, the commander of the division was able to order the creation of these units, as required. This made the division truly airmobile and increased its efficiency due to structural autonomy.

The combined capability of the division's helicopter support in relationship to how much combat power it could move in a given time, highlights the capability of the airmobile division. Two assault helicopter battalions could lift two infantry battalions of 2,200 soldiers and one

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[44] US Army Tactical Mobility Requirements Board, 39; Galvin, 288.

[45] Bieri, 31.

[46] Ibid., 19.

artillery battery of six 105-mm cannons thirty kilometers from the pick-up zone in just twelve minutes. Within an hour, the assault battalions could deliver an additional battalion and all of the brigade's support elements such as its headquarters, communications equipment, and vehicles. In comparison, a ground movement over this distance of an equal-size force, especially in the mountainous jungles of Vietnam, could take days. The speed of the division's employment of its forces created effectiveness derived of agility greater than any other division in Vietnam.[47]

1st Cavalry Division earned the nickname Sky Soldiers as a result of its use of helicopters as the primary means to move soldiers across the battlefield. Arriving via technologically advanced aircraft, these soldiers could effectively materialize as units anywhere on the battlefield. Special aviation support units formed the backbone of the division and were key to putting the sky in Sky Soldiers. During Operation Pegasus, the Sky Soldiers' structure of helicopters and units gave them the ability to outpace the North Vietnamese who did not possess a similar capability. The scene of helicopters filling the sky and rapidly building bases for operations out of once calm openings in dense mountain-filled jungles was possible because of the airmobile division's structure. The synchronization of the operation was possible because of individual helicopters orchestrated into teams that each had the capacity and capability to conduct all of their specialized missions in support of one operation.

The Development of an Effective Airmobile Doctrine for 1st Cavalry Division

On December 23, 1961, Major George Hardesty, commander of the 8th Transportation Company, and Major Robert Dillard, commander of the 57th Transportation Company, were full of energy as they filled out their reports for the day. They had just completed Operation Chopper, the first airmobile combat action of the Vietnam War that combined US Army helicopters and South Vietnamese paratroopers. Their thirty-two H-21 Shawnee helicopters had transported one

[47] Bieri, 45-46.

thousand South Vietnamese paratroopers into an enemy held area where they soundly defeated their foe.[48] Later, in August 1962, Operation Lam Som II attempted to build on what had been a string of such helicopter assaults, however this time weather delays, lack of properly timed fire support, and a learning enemy resulted in every H-21 Shawnee of the flight receiving hits by ground fire. As a result, two helicopters crashed in the landing zone killing two and injuring four soldiers. An eight-hour firefight ensued and the image of burning US helicopters in a South Vietnamese landing zone sent shock waves through the military.[49] Later, at the battle of Ap Bac in January 1963, worse results ensued when five US Army Helicopters were shot down by the enemy.[50]

Brigadier General Harry Kinnard must have had Lam Som II and the battle of Ap Bac on his mind as he took command of a unit that was later to be renamed the 1st Cavalry Division. The 11th Airborne Division was a unit created from stateside experiments combining helicopters and infantry forces into one fighting team. The reports of success and failure preoccupied his staff as they relentlessly tested concepts with a small cadre of soldiers and pilots between 1963 and 1965. As time progressed, his staff came to increasingly contain combat veterans just returning from Vietnam with first-hand airmobile operations experience. Kinnard's experimental division grew to over 1,900 soldiers and in July 1964, it faced its greatest test in the form of a large-scale wargame where its helicopter equipped airmobile infantry would attack the 82nd Airborne Division. Despite poor flying conditions generated from a hurricane that blanketed the Eastern United States, Kinnard conducted air assaults against the 82nd Airborne Division that outmaneuvered them across a simulated battlefield that ranged from Georgia to North Carolina.

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[48] Tolson, *Airmobility*, 3.

[49] Taddonio, 8.

[50] Carl John Horn III, "Military Innovation and the Helicopter: A Comparison of Development in the United States Army and Marine Corps, 1945-1965," (PhD diss., Ohio State University, 2003), 265.

11th Airborne Division's experiment with helicopters had built on combat experience and proved that helicopters were reliable in larger-scale operations than those conducted at the company and battalion level in South Vietnam. Aircraft no longer were an "adjunct to ground combat"; they had become fully integrated with the infantry they transported.[51] Having successfully proven the concept of airmobility, 11th Airborne Division received orders to rename itself as the 1st Cavalry Division and to deploy to Vietnam as the US Army's first and only airmobile division.[52]

As a result of the early experiences gained in Vietnam from 1961 to 1965, stateside testing conducted from 1960 to 1965, and from combat experience between 1965 and 1968, three sources of lessons were available to 1st Cavalry Division prior to the execution of Operation Pegasus. Early combat operations with helicopters transporting soldiers between 1961 and 1965 developed an initial set of knowledge on the basics of airmobility. These operations focused on company and battalion size movements of soldiers. The basic missions conducted became building blocks for stateside testing that included larger formations such as brigades and divisions. With early operations in Vietnam occurring at the same time as stateside testing, airmobile doctrine developed rapidly. After the division deployed in 1965 to Vietnam and fought its first large-scale battles in Vietnam, a third set of lessons developed. The lessons and best practices from these three experiences solidified into written form in the 1967 update of Field Manual 57-35 *Airmobile Operations*. As a result of the three experiences forming a well-known doctrine, staff and soldiers of the division became a more efficient fighting force during Operation Pegasus.

In the first grouping of experiences from 1961 to 1965, helicopter units in Vietnam flew in support of the US advisory mission to South Vietnamese Forces and gained practical knowledge of airmobility on the battlefield. Early aviation unit transportation missions often

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[51] Harry Kinnard, "Airmobility Revisited, Part I," *U.S. Army Aviation Digest,* 26 No. 6 (June 1980): 3.

[52] Stanton, 28-34.

provided logistical support to advisory teams, assisted in training the South Vietnamese forces, facilitated command and control, or provided troop lift capability to combat forces.[53] As Tolson noted, this was the lowest form of airmobility; "that is, simply transporting people from point 'A' to point 'B'." He stated this because these helicopter movements "lacked the essentials of unified command, specially trained personnel, organic firepower, and responsive reconnaissance."[54] Despite this critique, these early airmobile operations were not insignificant. The lessons derived of them greatly informed the formation and development of the 1st Cavalry Division back in stateside testing.

During the same period US Army aviation units providing movement of forces with whom they did not habitually work. The lack of a single unified command relationship between them created desynchronization. During Lam Som II in August 1962, the bombardment of the landing zone occurred too early to protect helicopters that had delayed enroute to the landing zone due to bad weather. There was no ability to adjust the bombardment plan supporting the landing helicopters because the aviation and fire support commanders answered to different leaders. Neither could talk to each other.[55] Complicating this even further, South Vietnamese forces lacked the training that would enable effective integration into helicopter operations. Much pre-operation time was required to teach the South Vietnamese simple tasks, such as loading and unloading the helicopter.[56] This was not unique to this specific mission. In other missions, similar failures occurred where pilots of supporting aircraft did not attend briefings on the missions they were supporting and failed to talk on the same radio frequencies of the supported infantry.[57] The

[53] Taddonio, 12.

[54] Tolson, *Airmotility*, 28.

[55] Taddonio, 12.

[56] Tolson, *Airmobility*, 28.

[57] Headquarters US Army Section, *Lessons Learned Number 12* (Vietnam, Saigon: Military Assistance Advisory Group Vietnam, 1962), 1-2.

critical lesson derived of these failures was to ensure that one commander and one unit had control of all facets of the operation. While coordinating outside support to reinforce an operation is always a benefit, the ability to conduct the support from elements entirely within one parent organization allows a single chain of command to limit or mitigate adjustments to the plan more efficiently. These early lessons transmitted stateside by special teams who collected experiences of US Army units, reinforced the desire of Kinnard to form the 1st Cavalry Division as one cohesive aviation and infantry unit.[58] To do so, he ensured the incorporation of specially trained infantry units trained and experienced in the execution of operations in close coordination with aviation elements in the 1st Cavalry Division. He also ensured that fully integrated fire support, capable of providing protection without outside assistance, and a single command structure existed within the test division. His command structure would be responsible for coordinating infantry on the ground, helicopters in the sky, and fire support as needed. All of these elements would be organic to the airmobile division. The development of airmobile doctrine in South Vietnam directly correlated to the effectiveness of the test airmobile division in the United States.[59]

Finally, combat experience from 1961 to 1965 demonstrated the need for an armed escort to accompany troop-carrying helicopters during an operation.[60] The H-21 Shawnee, an early workhorse of troop movements, lacked armament. With only one light machine gun to protect itself, pilots armed with submachine guns would defend the opposite side of the aircraft during its landing. The weapons of the Shawnee were simply inadequate for the task due to the design of

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[58] Army Concept Team in Vietnam, *Airmobile Company in Counterinsurgency Operations* (Cameron Station, VA: Office of the Director Joint Research and Test Activity, 1964), vii.

[59] Horn, 265-266.

[60] Bradin, 113; Christopher Cheng, *Air Mobility: The Development of a Doctrine* (Westport, CT: Praeger Publishers, 1994), 188.

the aircraft's singular door. Fortunately, early model UH-1A Hueys were arriving in Vietnam by 1962. The Huey's two large sliding side door design allowed modification and creation of ad hoc weapon mountings. Immediately after the new gunships began escorting troop carrying helicopters, attacks on aircraft decreased from .011 hits per flying hour to .0074 hits per flying hour; a sign of the effectiveness of the escort that reduced hits on troop carrying aircraft by sixty-eight percent. As newer UH-1B Hueys arrived, the more powerful engine enabled the gunship to carry more ordinance. In addition to the escort mission, they could now bombard a landing zone ahead of the arriving aircraft in lieu of, or in addition to, Air Force airplanes. Protection and flexibility increased significantly for Army Aviation.[61] Development of the ad hoc weapon mounting systems was so successful that it became standardized, thus ensuring that the gunship weapon systems could be mounted on any helicopter within the entire US Army fleet. 1st Cavalry Division benefited from the development of the gunship, both as a concept and as a weapon platform, during testing in combat prior to the division's arrival in South Vietnam. In stateside testing, the weapon systems employed were largely combat proven designs.[62]

While combat experiences occurred in Vietnam, a second set of experiences occurred stateside with testing of large-scale airmobile operations. This separate, but simultaneous, early experimentation with airmobile doctrine gave 1st Cavalry Division specially designed aircraft and outlined the initial concepts of purpose built units that would combine aviation and infantry elements. In January 1960, Army Chief of Staff, General Lyman Lemnitzer, directed Lieutenant General Gordon Rogers to conduct an Army aircraft requirements board; this board paved the way for what type of aircraft the US Army would focus on developing during the early 1960s. The board, named the Rogers Board, studied the then current requirements of Army aircraft and found that three types of aircraft required further development for the observation, surveillance,

[61] Tolson. *Airmobility,* 30.

[62] Bradin, 113-114.

and transportation roles. Missing from the report was the requirement for an attack helicopter. This was mostly the result of the US Air Force strictly enforcing the requirements for armed aircraft to fall under the auspices of their authority for development and operation. As a result, only minimal self-defense type armaments could exist on Army helicopters. [63] The Rogers Board also laid the groundwork for establishing a test "air fighting unit" for further experimentation. The seeds of the airmobility concept soon began to spread after the Rogers Board. Aviation officers, such as Lieutenant Colonel Russel Bonasso from the 101st Airborne Division, briefed concepts of drastic organizational change within Army aviation by recommending the pooling of all available helicopter assets within the division into one command. Bonasso briefed this concept to then Major General Westmoreland, Commanding General 101st Airborne Division. Seven years later, Westmoreland would see the mobile helicopter unit concept in action when he ordered the movement of 1st Cavalry Division to relieve Khe Sanh. [64] The Rogers Board began the development of the aircraft that would make 1st Cavalry Division successful by outlining the requirements that would encourage further development of the UH-1 Huey, CH-47 Chinook, and an improved scout type aircraft as early as 1960. Industry benefited from having lead-time to produce the future division's aircraft based on updated requirements.[65] If the board had not focused energy on developing aircraft more rapidly, aircraft would not have been available in sufficient numbers to field the large aviation unit required by the division based on then current projections of spending on establishing airmobile units.[66] Additionally, if the board had not happened, the division may not have developed as early, or may not have developed enough, to

[63] Richard P. Weinert, *A History of Army Aviation: 1950-1962* (Fort Monroe, VA: US Army Training and Doctrine Command, 1976), 18.

[64] Tolson, *Airmobility*, 9-10.

[65] Cheng, 93-94, 137-138, 181; Weinart, 25-29.

[66] Weinart, 30-31; US Army Tactical Mobility Board, 2, 7.

be deployable by the time of Operation Pegasus in 1968.

When the stateside initiative of developing the airmobile concept began to stall after the conclusion of the Rogers Board, Secretary of Defense Robert McNamara wrote a letter on April 19, 1962 to the Secretary of the Army, Elvis Stahr, which resulted in another board that paved the way for expansion of the airmobile concept to the division level. The letter emphatically questioned why the Army stalled and underfunded its aircraft development. McNamara and his office stated that they believed new concepts of employing Army aviation should undergo testing in order to examine drastically different forms of maneuver warfare.[67] He demanded a quick response. As a result, the commander of the 18th Airborne Corps, General Howze, lead yet another board to determine if the concepts of using helicopters as a new form of warfare were feasible. The Secretary of Defense was very specific in his guidance to the Army stating: "I shall be very disappointed if the Army's reexamination merely produces logistically oriented recommendations to procure more of the same, rather than a plan for employment of fresh and perhaps unorthodox concepts which will give us a significant increase in mobility."[68] His "more of the same" reference was critical of the Army's then current, 1962-type, aviation structure in which aviation units remained separated from the ground units they supported. Thus, he encouraged the formation of unorthodox methods; one of which was making a division fully mobile via helicopter. McNamara was not making his remarks blindly, as early reports on the effectiveness of helicopter forces or their status were readily available to him via White House update briefings to the President.[69] He certainly knew of the value derived of combining

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[67] Robert McNamara, Memorandum for the Secretary of the Army, April 19, 1962 (Washington, DC: Office of the White House, 1962).

[68] Tolson, *Airmobility,* 19.

[69] Robert McNamara, Talking Paper for the Chairmen, JCS, for meeting with the President of the United States on Current US Military Actions in South Vietnam, 9 January, 1962 (Washington, DC: Office of the White House, 1962); Mike Gravel, *The Pentagon Papers Gravel edition Volume 2,* Excerpts from General Taylor's report on his mission to South Vietnam for President Kennedy, 3 November, 1961 (1961 repr; Boston, MA: Beacon Press 1971), 652-654.

helicopters with infantry. The resulting Howze Board tested this method of helicopter warfare during the summer of 1962. When the board submitted its findings to the Secretary on August 20, 1962, it contained the recommendations for what would ultimately become the concept of the 1st Cavalry Division. It recommended a division having enough forces to lift one third of its infantry in a single lift and it recommended the formation of a singular command structure so that the division could operate as one entity in which aviation and ground forces worked together. It also recommended that the airmobile brigade be a force capable of conducting all elements of movement on the battlefield independently. The division's helicopters would provide movement capability in lieu of motorized ground transport, access to logistics, and fire support. Notably, the results of the Howze Board required the new airmobile division's helicopters to be armed.[70] The Secretary of Defense's directive to establish an airmobile unit enabled the Army to shed the shackles of the US Air Force imposed armed aircraft restrictions so that it could finally develop attack helicopters. Without McNamara's persistence on forcing the Army to conduct the Howze board, the development of testing an experimental division using a helicopter force may never have happened, and the experimental division might never have become the 1st Cavalry Division.

With approval to begin testing the Howze Board concept further, Kinnard began to take the theories and combine them with the company and battalion level practical experience gained in Vietnam. He faced many challenges as Army aviation regulations and standard practices required rewriting in order to transport much bigger units. There was little doctrine for him to guide his staff and regulations were often completely outdated. As an example, pilots could not fly helicopters in formation within the United States since aviation regulations in 1963 prevented them from doing so despite the fact that formation flying was already a routine concept for combat operations in Vietnam. To identify other roadblocks in development of an expanded airmobile concept, Kinnard established an idea center where any soldier could propose a method

[70] J.A. Stockfisch, *The Howze Board and Army Combat Developments* (Santa Monica, CA: RAND, 1994), 18-23; Tolson, 20-24.

to enhance the effectiveness of the experimental division. The "idea center" would review every concept submitted, regardless of the soldier's rank, to determine if it warranted further experimentation or implementation. After clearing out administrative obstacles, Kinnard built standardized tactics for aviation companies and battalions to use in conjunction with infantry units and then incrementally expanded the tactical concepts to battalion and then brigade level. By the time of the final capstone exercise, Kinnard had, increment by increment, produced an airmobile division to face an opposing force comprised of the 82nd Airborne Division. His tested tactics had evolved into a solid airmobile doctrine that withstood the test of simulated combat by defeating the 82nd Airborne Division in a test of concept exercise called Air Assault II.[71] The unit was now ready to move from simulated, to actual combat.

The differences between the 1963 and 1967 versions of Field Manual (FM) 57-35, *Airmobile Operations,* highlights much of the knowledge gained by 1st Cavalry Division in the third set of experiences conducting operations after its deployment in 1965. Given that the Rogers and Howze Boards culminated in late 1962, the 1963 version of FM 57-35 only reflected the lessons learned from early experimentation in airmobility. It built on the limited combat experience gained by only a few aviation companies deployed in support of the advisory mission. Not surprisingly, its focus was at the company level employment of helicopters. In 1963, the separate aviation battalion supporting an entire division was still the norm and the *Airmobile Operations* manual reflected that fact. Because of prevalent conditions facing the US Army prior to increased involvement in Vietnam, the 1963 manual devoted much of its effort to the conduct of operations during large-scale conventional and nuclear conflict and not the then prevalent conflict type of counterinsurgency.[72]

Increasingly larger scale combat testing of the airmobility concept took place in the years

[71] Horn, 262-268.

[72] Taddonio, 11.

following the introduction of the 1963 manual, especially after 1st Cavalry Division deployed to Vietnam in 1965. One of the first large scale operations was the division's interaction with North Vietnamese Army soldiers in the Ia Drang Valley campaign, where they defeated three enemy regiments. Early battles, such as this one, highlighted the ability of the division to establish contact with an enemy force and then quickly move its soldiers to concentrate efforts at critical points on the battlefield. It also highlighted how command and control aircraft could coordinate artillery support for soldiers in contact.[73] Other engagements would highlight the need for increased coordination between helicopters and artillery to ensure that aircraft did not fly between firing cannons and their targets. Assisting in the coordination to avoid this deadly mix were complex communications plans developed so that all elements could talk with each other via ground and aircraft radio retransmission sites.[74] These types of lessons enabled the division to physically expand its operations to larger unit sizes. As the units conducting the missions became larger, the length of the operations became longer. Night operations, and a standard on how to conduct them safely, developed from lessons learned after Soldiers of 1st Squadron, 9th Cavalry required extraction after a lengthy daytime engagement spilled over into night.[75] With the ability to conduct larger operations, and to conduct them at any time of day, the division had expanded the concept of airmobility. During Operation Pegasus, all of these lessons became important as air corridors and round the clock movement of soldiers required aviators and infantry to talk continuously on radio for synchronization and de-confliction.[76]

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[73] Headquarters 1st Cavalry Division, *Lessons Learned 01 OCT – 30 NOV 65* (Vietnam: Department of the Army, 1965) 7.

[74] Headquarters US Military Assistance Command Vietnam, *Counterinsurgency Lessons Learned Number 61: Salient Lessons Learned* (Vietnam; Department of the Army, 1967), 3-4, 10.

[75] Army Concept Team in Vietnam, *Night Airmobile Operations in Republic of Vietnam* (Vietnam, Department of the Army, 1966), 2-3.

[76] 31st Military History Detachment, 15-16.

From 1961 to 1968 airmobility as a doctrine had built up from its most basic stage to its most advanced stage as demonstrated during Operation Pegasus because it benefited from three experience groups. The division's actions during the operation show how it effectively applied all of the lessons learned from the newly developed doctrine. From April 1, 1968 to April 15, 1968, the division cavalry squadron, its three infantry brigades, and its aviation group conducted operations that were over three times larger than the largest of operations conducted three years prior. Its speed, mobility, and coordination of firepower defeated the bulk of the enemy and swept what remained from the Khe Sanh area in such a rapid order that the enemy only successfully shot down two Hueys during the operation.[77] Its aircraft enabled the entire division the ability to move free of canalizing terrain leading towards Khe Sanh. The efficiency of 1st Cavalry Division benefited from the lessons learned from experience gained by units in Vietnam before it deployed, by stateside experimentation, and from its own combat actions prior to 1968.

[77] 1st Cavalry Division, Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, 5,17.

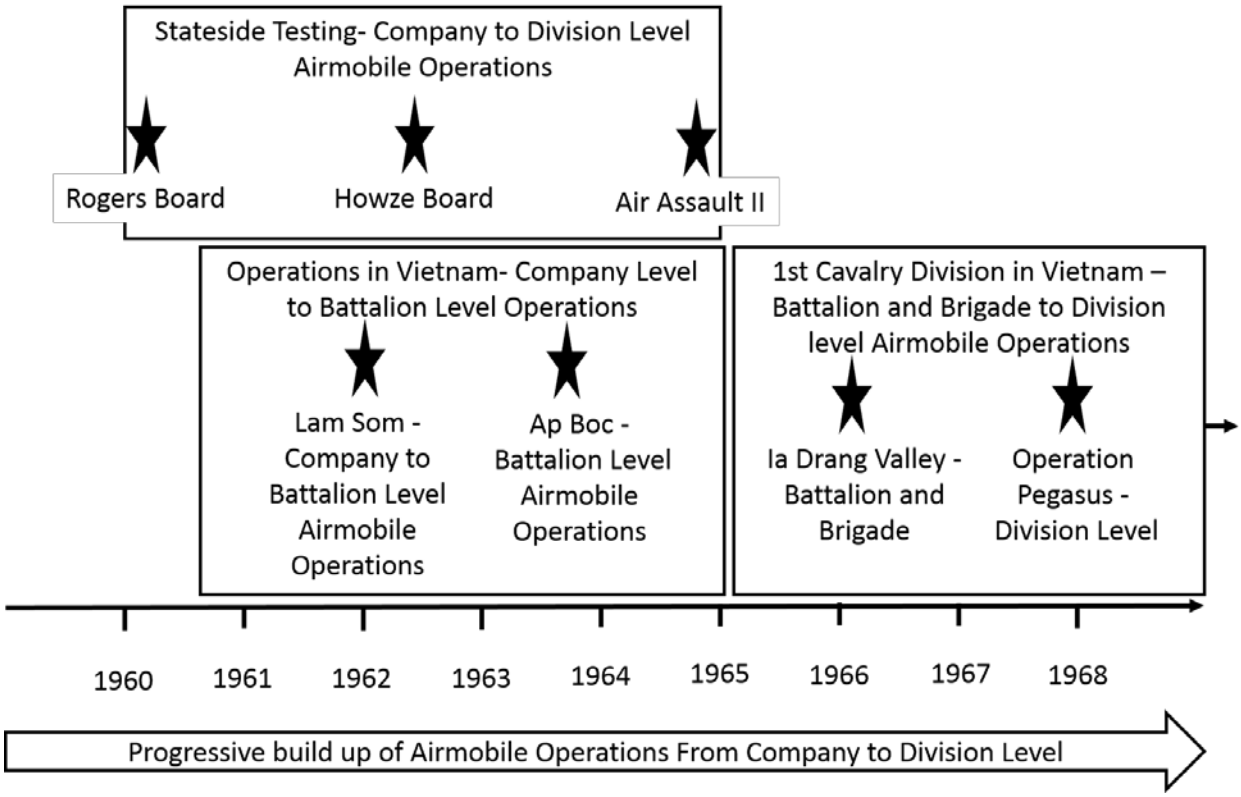

Figure 2. Timeline of Experience Groupings in the Development of Airmobile Doctrine

Source: Created by author and derived of information from Carl John Horn III, "Military Innovation and the Helicopter: A Comparison of Development in the United States Army and Marine Corps, 1945-1965," (PhD diss. Ohio State University, 2003), 254-277; Shelby L. Stanton, *Anatomy of a Division The 1st Cav in Vietnam* (Novato, CA: Presidio Press, 1987), 23-144; and Frank T. Taddonio, *What Can We Learn from a War We Lost? The Relevance of the Vietnam Experience for Today's Assault Helicopter Doctrine,* Monograph (US Army Command and General Staff College, 1985), 6-11.

Standard Operating Procedures and Liaisons

As daylight faded, the last scout teams of Cobra, Cayuse, and Hueys began to land. The wind and dust they kicked up annoyed hundreds of crew chiefs who were hurrying to ready their aircraft for a mission they originally thought would begin in two-days time. Trucks full of supplies were placing cargo near the aircraft for the next day's resupply missions and large cannons firing at seemingly random intervals were destroying any sense of calm the mountain valley normally provided at this time of day. Reports and rumors amongst the soldiers were that

the mission from the previous day went so well that the division commander wanted to speed things up to outpace the enemy's westward withdrawal in order to cut them off and defeat them. What they had expected to be pulses of intense mission activity every two or three days, was now a constant effort. Soldiers and aviators worked like well-oiled machines launching, recovering, and relaunching helicopters. They were all tired, but knew they must get ready for another long day. Everyone knew that the success of the division, and the life of the soldiers in the field, depended on these helicopters, whether it was to provide fire support, transport, or resupply. The aircraft all must fly. While they were seventy-five miles away from their normal home base, the temporary base they occupied had a familiarity to it because it looked like every other base they had hastily set up while operating away from home. In the fading light, they had a very good sense of what was around them even though the geographic area was still new. Inside the sandbag-walled command posts, the pilots who had just returned from flying scouting missions over the next day's landing zones made final plan adjustments with the infantry commanders and their staff. Many of them looked as if they had borrowed props from an old John Wayne Western movie set as they adorned sweat soaked blue Stetson cavalry hats and yellow scarves with their flight suits and green jungle fatigues. Since many of the infantry commanders and staff members had been passengers on the scouting missions, they were easily able to adjust their plans after only brief discussion upon return. At the end of the discussion, they divided to brief their soldiers and pilots on the final plan so that they could get on with their preparations for the next day's brigade air assault. While the mission they were about to conduct was a massive undertaking that required almost every single helicopter of the division, they all had a sense of calm. To the casual onlooker it would seem as if these soldiers had days to prepare when in fact they only had hours.[78]

[78] Story created by author, derived from events found in Stanton, 195-208; Taddino, 12-13; 1st Cavalry Division Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear, 5-7; and Unknown, "How the 1st of the 9th Does It" *The Air Cavalry Division 1* No. 2 (July 1968): 2-8.

The command and control of the 1st Cavalry Division during Operation Pegasus was possible because of its staff structure and standard operating procedures. Because it was a unique division with large amounts of helicopters transporting infantry in numbers greater than any other division at the time, the staff and standard operating procedures were critical to its success. The preparation of the battlefield and construction of airfields prior to Operation Pegasus were key examples of the ability of staffs and standard operating procedures to be effective.

While the airmobile division's staff was similar in many ways to others, it differed because it contained specially trained liaison officers that created synergy between infantry and helicopter units. Like other division staffs, the headquarters contained a set of sections identified to conduct certain tasks from personnel and administration to operational planning for combat. Specific to the operational planning function was the G-3 section. Its task was to plan missions such as Operation Pegasus. Liaison officers worked closely with this section.[79]

A liaison officer was typically a highly qualified aviator who normally worked in an aviation unit. During operations he would reside in the infantry headquarters while mission planning was taking place. As a member of the supporting aviation unit, he could immediately advise infantry planners on how aviation could best support the ground tactical plan. In a typical mission planning cycle, planners would receive notification of an air assault around 6:00 p.m. the day prior to an airmobile mission. Following the joint infantry and aviation planning session, liaison officers often flew reconnaissance missions to verify landing zones while giving infantry commanders the chance to see their objectives first hand. During the mission day, the liaison officer would pilot either an aircraft in the assault or pilot another special command and control aircraft high above the mission in order to ensure the plan unfolded as intended.[80] While other divisions employed liaison officers in much the same manner, they did not do it on such a large-

[79] Stanton, 195-196.

[80] Taddino, 12-13.

scale, and their liaison officers were only temporary. As a permanent element of the airmobile division, 1st Cavalry Division's liaison officers built strong relationships and, with frequent repetition they became highly proficient and integral members of a team which vastly increased efficiency and effectiveness.

During Operation Pegasus, the liaison officer and staff structure that facilitated quick turnaround of planning to execution gave Tolson the ability to rapidly react to the enemy situation. Since he knew the division could react with little notice, he limited detailed planning to the first day's air assault operations. He knew that once the first day's assaults were complete, the knowledge of enemy strength and location would be more certain. He would then select landing zones from the subsequent day's activity based on this improved intelligence and from a list of possible landing zones already prepared by his scout's presence in the area prior to the operation.[81]

The short amount of time for planning created a flurry of activity as units across the division received word about the time and location of a massive air assault with less than twenty-four hours' notice. Fortunately, the standard operating procedures of the division laid out a process of requesting and coordinating aviation assets.[82] Staff and commanders were able to react to the late decision and coordinate transport for a 5,000 soldier strong brigade because of standardized request forms and processes within the division standard operating procedure. Standardized forms for everything from the request of photography reconnaissance to helicopter lift support made pushing requests between infantry and aviation units more effective.[83] Since they also followed a standard timeline of events and understood each other's duties as outlined in

[81] Taddino, 171.

[82] 1st Cavalry Division (Airmobile) Tactical SOP (Vietnam, Headquarters 1st Cavalry Division, 1968), Annex F.

[83] 1st Cavalry Division (Airmobile) Tactical SOP, Annex F, Appendix 2 Annex B, Tab F to Appendix 5, Annex X.

the standard operating procedure, a common understanding of roles for all parties in the air assault operation developed with little effort. As a result, in less then twenty-four hours, they were able to coordinate the soldier's movements to multiple landing zones, while under the synchronized cover of air strikes, artillery, and helicopter gunship support. This efficient planning aided Tolson's ability to adjust his battle plans against his enemy's reaction. Even the heavily biased North Vietnamese Army after action reports would admit that they had to retreat in the face of the threat of 1st Cavalry Division.[84]

The division's procedures also made it more effective at movement and rapid displacement on the battlefield by use of standardized plans, such as those for logistical bases. When division planners looked at the requirements to move the division's 15,000 soldiers and 450 helicopter force over seventy-five miles to fight almost immediately on arrival, they realized early that establishing a logistics support base and an efficient movement plan would be key. While having only just received the mission for planning, the staff ensured that requests to begin the construction of a large logistical support base and airfield immediately went out. By March 12, 1968, construction of the logistical base had commenced. By April 1, 1968, the base was fully stocked and ready to distribute supplies for Operation Pegasus.[85] An element that made the stocking and build-up occur so rapidly was that the division's standard operating procedures already contained detailed plans for a standardized airfield. Dimensions, obstacle clearance zones, and required clearances for aircraft approaches to the runway were all predetermined for the construction engineers.[86] When the division's units moved to this airfield and other landing zones around it, they were all restricted to a limited amount of items outlined by the standard operating

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[84] William Stubbe, *B5-T8 in 48 QXD The Secret Official History of the North Vietnamese Army of the Siege at Khe Sanh Vietnam Spring 1968,* trans. by Sedgwick Tourison (Wauwatosa, WI: Ray Stubbe, 2006), 44-45.

[85] 31st Military History Detachment, 3.

[86] 1st Cavalry Division (Airmobile) Tactical SOP, Annex H.

procedure. As an example, staff sections knew that when it was time for them to move they could consult the standard operating procedure for how many pounds of equipment they could bring with them.[87] When helicopters arrived to pick them up, the air crews knew ahead of time how much cargo they would need to lift and this avoided situations where sections or units showed up for movement with more than the helicopters could lift. With almost every facet of the division having pre-made plans, moving rapidly to distant locations became easier for planners to detail ahead of time. This enabled the division to execute operations effectively with little notice. It also enabled planners and commanders to work on tasks that were more important, such as tactical efforts or decisions.

Liaison staffs made the division more effective at synergizing efforts while its standard operating procedures created streamlined means for planning to ease into execution. Because of these elements, Tolson was able to move from the conceptual plan that he had made following initial notification on January 25, 1968, to execution with little notice.[88] He and his staff accomplished planning and preparation for Operation Pegasus while also being actively involved in suppressing the Tet Offensive around Hue throughout February and March 1968. [89] With all of his officers highly proficient and formally trained in airmobile operations, his staff was capable of planning large operations with ease.[90]

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[87] 1st Cavalry Division (Airmobile) Tactical SOP, Annex O.

[88] Robert, Cushman to John Tolson, January 28, 1968, MSG, HQ III MAF 25 1428z JAN 68 Subject: Contingency Planning CG III MAF to CG 1 ACD, in Historical Study 3-68 "Operation Pegasus", (Vietnam: HQ Provisional Corps Vietnam, 1968), 3.

[89] 31st Military History Detachment, 3.

[90] Headquarters 1st Cavalry Division, *Seven Month History and Briefing Data; September – March 1966* (Vietnam: Department of the Army, 1966), 12; John Tolson, *Senior Officer Debriefing Program: Report of Major General John J. Tolson*, (Washington, DC: Department of the Army, 1968) 8.

Conclusion

In April 1968, Operation Pegasus was the largest airmobile operation conducted by 1st Cavalry Division. It was the first divisional airmobile operation conducted by the US Army. With all three of the division's infantry brigades, the artillery, the aviation group, the cavalry squadron, and 15,000 additional marines and South Vietnamese military forces combined into one fighting force, its staff's coordination of the operation was no easy task. Despite the enormity of the task, the division prevailed and soundly defeated the enemy. Operation Pegasus was thus a mission where airmobility was able to flaunt all of its efficiencies with great success. The division flew its forces approximately seventy-five miles to conduct the fifteen-day battle and then, after accomplishing its mission, it flew an additional seventy-five miles to conduct one more large-scale airmobile operation in the A Shau Valley.[91] Because of its efficiency, the US Army would soon seek to expand the airmobile concept of 1st Cavalry Division.

The division was efficient enough to complete a task as large as Operation Pegasus because of its unique structure. Modern aircraft brought the latest in helicopter technology to the battlefield and this new technology manifested itself in key designs that gave the division the ability to move one third of its soldiers in a single effort. The advent of the turbine engine brought US Army helicopters into the jet-age in terms of speed and vastly increased lift. Helicopters specialized for the transport of soldiers and cargo, and the provision of fire support, were readily available to the division via its one of a kind organization. The division structure, incorporating aviation elements at all levels of operation, contained nearly four times the amount of helicopters of other divisions at the time.

With all of these helicopters habitually conducting missions with units organic to the division, efficiency by repetitive action flourished and this became solidified into a tested doctrine. In combat and stateside testing, doctrine derived of lessons learned developed for all

[91] Tolson, *Airmobility*,179-180.

airmobile practitioners to study and use. The division's forces of infantry and aviation created a synergy that enabled them to maneuver and fight via the helicopter. This doctrine was refined as the enemy made adjustments to counter airmobility. It also expanded to include best practices for fighting counter insurgency based upon experiences the division had learned during its early years of fighting in Vietnam. The entire US Army benefited from these lessons learned when the doctrinal publications produced in 1967 became available for all to study.

With its unique structure, 1st Cavalry Division was able to incorporate this updated doctrine into a division standard operating procedure for application at levels no other unit at the time could attain. These procedures gave the division the ability to accomplish once complicated tasks with minimal planning effort. Command and control of this effort was easier because of them. By the time of Operation Pegasus in 1968, the division had all of the advances in helicopter design readily available to it; it had years of doctrine development, and it had a command team at the helm that was capable of stretching its abilities to the maximum.

The effectiveness of the division in Vietnam was so great that the US Army moved as quickly as possible to build other airmobile divisions. The 23rd Infantry Division "The Americal Division" received an aviation group similar to 11th Aviation Group in February 1969. In addition, the 101st Airborne Division "Screaming Eagles" converted to an airmobile division in July 1969, exactly replicating the structure of the 1st Cavalry Division.[92] Realizing the effectiveness of the 1st Cavalry Division's airmobile concept, the Army was seeking to expand and utilize it as quickly as possible.

Field Manual (FM) 3-04, *Army Aviation*, outlines a description of aviation units that are not capable of conducting divisional level movement. They cannot support division level movement because they lack the capacity to perform the task of lifting one-third of a division's force in a single movement with their assigned helicopters. As a result, the airmobile division no

[92] Tolson, *Airmobility,* 201.

longer exists and the airmobile concept is defunct. In 1968, 1st Cavalry Division could transport 1,634 soldiers or 749,200 pounds in one lift on 164 Hueys, twenty-eight Chinooks, and four Sky Cranes.[93] In contrast, a modern combat aviation brigade can transport 651 soldiers or 513,600 pounds in one lift on thirty-eight Blackhawks and twelve Chinooks.[94] The structure of the 1968 1st Cavalry Division's helicopter fleet thus greatly out performs its modern equivalent in both soldier and cargo lift capability by a ratio in excess of two to one in total soldier capacity and three to two in cargo. The structure of 1st Cavalry Division shows a unit designed to conduct airmobile operations easily with one brigade on any given day. The structure of the modern combat aviation brigade shows a unit struggling to perform an air assault mission above the battalion level.

11th Aviation Group, 1st Cavalry Division (1968)						
	Number of Aircraft	Readiness Rate	Passenger Capacity	Total Passengers	Cargo Capacity (lbs)	Total Cargo (lbs)
UH-1	164	0.8	7	918	4,000	524,800
CH-47	28	0.6	33	554	10,500	176,400
CH-54	4	0.6	67	161	20,000	48,000
			Total	1634	Total	749,200

Combat Aviation Brigade FM 3-04 (2015)						
UH-60	38	0.8	11	334	9,000	273,600
CH-47	12	0.8	33	317	25,000	240,000
			Total	651	Total	513,600

Figure 3. 11th Aviation Group (1968) versus Combat Aviation Brigade(2015)

[93] Bieri, 16-46; FM 57-35, 110-112.

[94] Field Manual (FM) 3-04, *Army Aviation* (Washington, DC: Government Printing Office, 2015), 2-2, 5-4 to 5-6.

Source: Created by author and derived of information from Leon Bieri, *An Analysis of the Current Concept for Employment of the Airmobile Division Against Insurgent Forces in an Underdeveloped Area*, Monograph (US Army Command and General Staff College, 1966), 16-46; Field Manual (FM) 57-35, *Airmobile Operations* (Washington, DC: Government Printing Office, 1967), 110-112; and Field Manual 3-04, *Army Aviation* (Washington, DC: Government Printing Office, 2015), 2-2, 5-4 to 5-6.

The combat aviation brigade from FM 3-04 is a modular unit that lacks in terms of sheer helicopter lift capability when compared to the 1968 era 1st Cavalry Division. This results in less integrated training time available for the infantry divisions it supports. Tolson and Kinnard prioritized integration between aviation and infantry. The 11th Combat Aviation Group was dedicated and specially built to support the infantry of the 1st Cavalry Division. Its size and close working relationship fostered a team spirit of cavalry comradery exemplified by the fact that both ground elements and aviation elements wore their blue Stetson hats in unity. The combat aviation brigade outlined in FM 3-04, the capstone document for the US Army on aviation operations, describes a brigade that is primarily modular. It is a brigade that is readily broken down and built up as a task force.[95] It is a "plug and play" type unit. It must divide its attention to an entire division with its limited number of aircraft. This erodes the capability of the modern aviation brigade to conduct repetitive training and integration with the infantry force it supports. With less aircraft to train on, fewer infantry units have an opportunity to rehearse and develop integrated standard operating procedures with their aviation counterparts.

With modification to the structure of the modern air assault division, today's US Army could conduct operations similar to those conducted in Vietnam. Reversing the recent deactivation of the second combat aviation brigade supporting today's remaining air assault division could support this. By restoring two combat aviation brigades to the division, air assault doctrine will remain in a constant state of readiness. A return of a second combat aviation brigade to the 101st Airborne Division will also elevate capability of its organic assets to the level

[95] FM 3-04, 2-1 to 2-6.

required to lift one of its brigade combat teams in a single mission. By doing so, one division within the US Army will be able to retain a hard-won knowledge of air assault doctrine. Division level air assault operations would return from theoretical to practical. Units lacking the aircraft capacity, could benefit from the upkeep and advances in doctrine by this unique air assault division. If needed, the division's model could expand to other divisions, as was done in Vietnam. While any division could receive a second combat aviation brigade in time of crisis to conduct an airmobile type operation, if it is not tested and ready, the division will not be set up for success. Simply adding aviation to infantry on an ad hoc basis would be ignoring the lessons learned of integration and thoroughly practiced standard operating procedures found to be so effective in Vietnam for the 1st Cavalry Division.

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Appendix A- Operation Pegasus Aviation and Ground Maneuver Sketch April 1, 1968

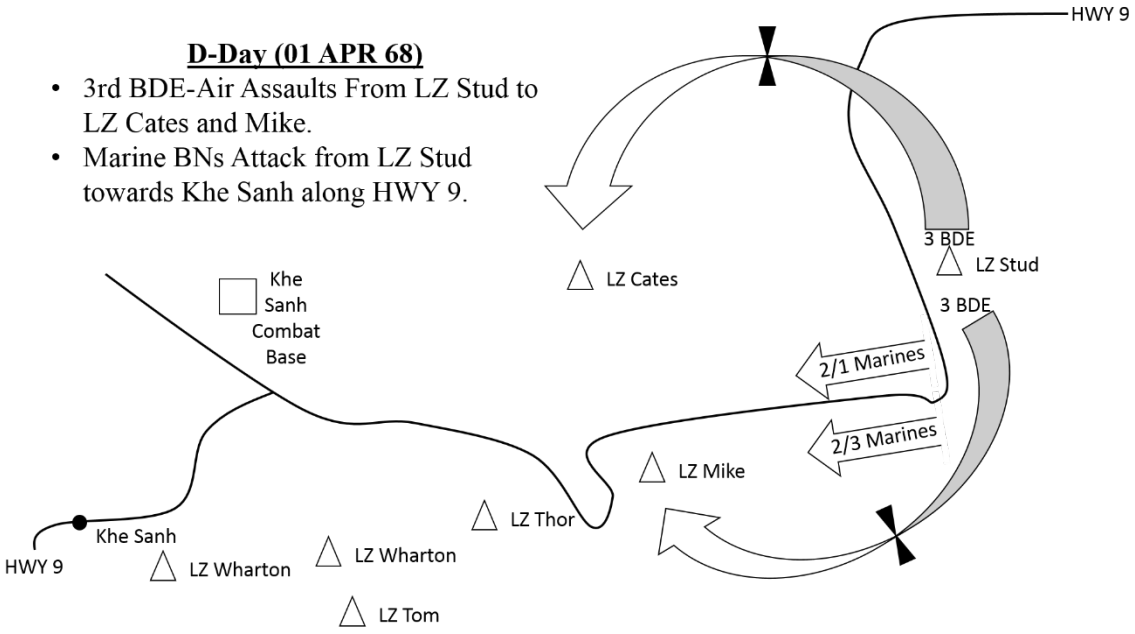

Figure 4. 3rd Brigade Air Assault on April 1, 1968

Source: Created by author and derived of information from Willard Pearson, *Vietnam Studies: The War in the Northern Provinces 1966-1968* (Washington, DC: Government Printing Offices, 1975) MAP 11; 1st Cavalry Division, Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear (Washington, DC: Department of the Army, 1968), 5.

Appendix B- Operation Pegasus Aviation and Ground Maneuver Sketch April 3, 1968

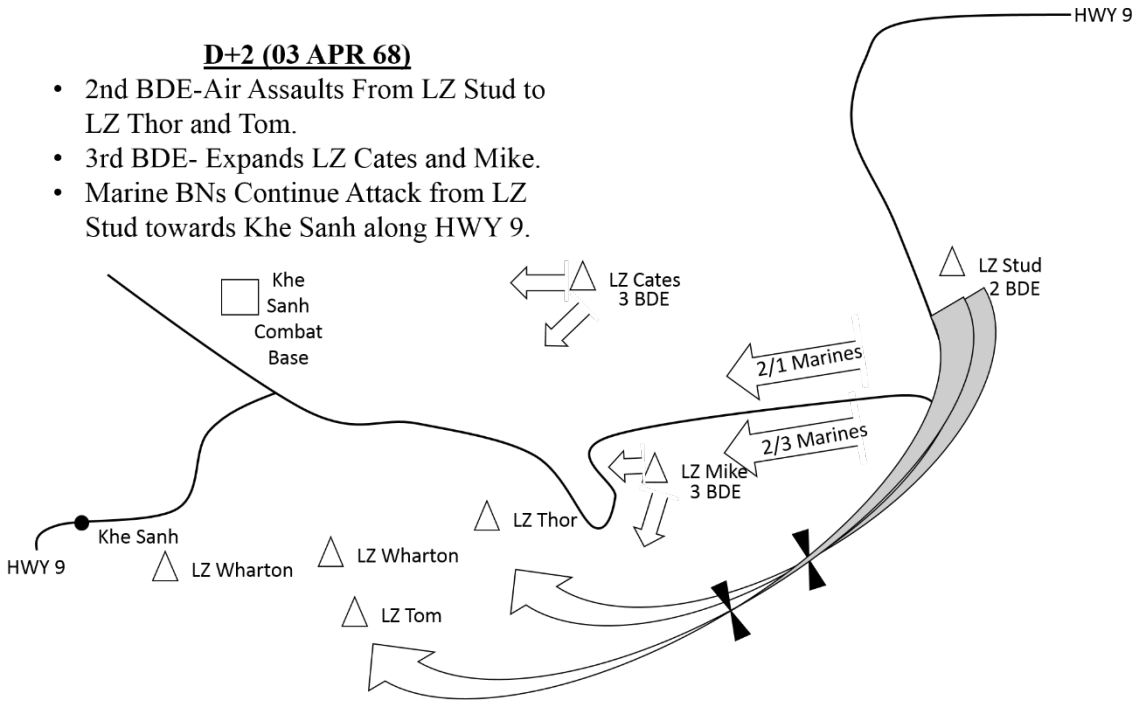

Figure 5. 2nd Brigade Air Assault on April 3, 1968

Source: Created by author and derived of information from Willard Pearson, *Vietnam Studies: The War in the Northern Provinces 1966-1968* (Washington, DC: Government Printing Offices, 1975) MAP 12; 1st Cavalry Division, Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear (Washington, DC: Department of the Army, 1968), 6.

Appendix C- Operation Pegasus Aviation and Ground Maneuver Sketch April 5, 1968

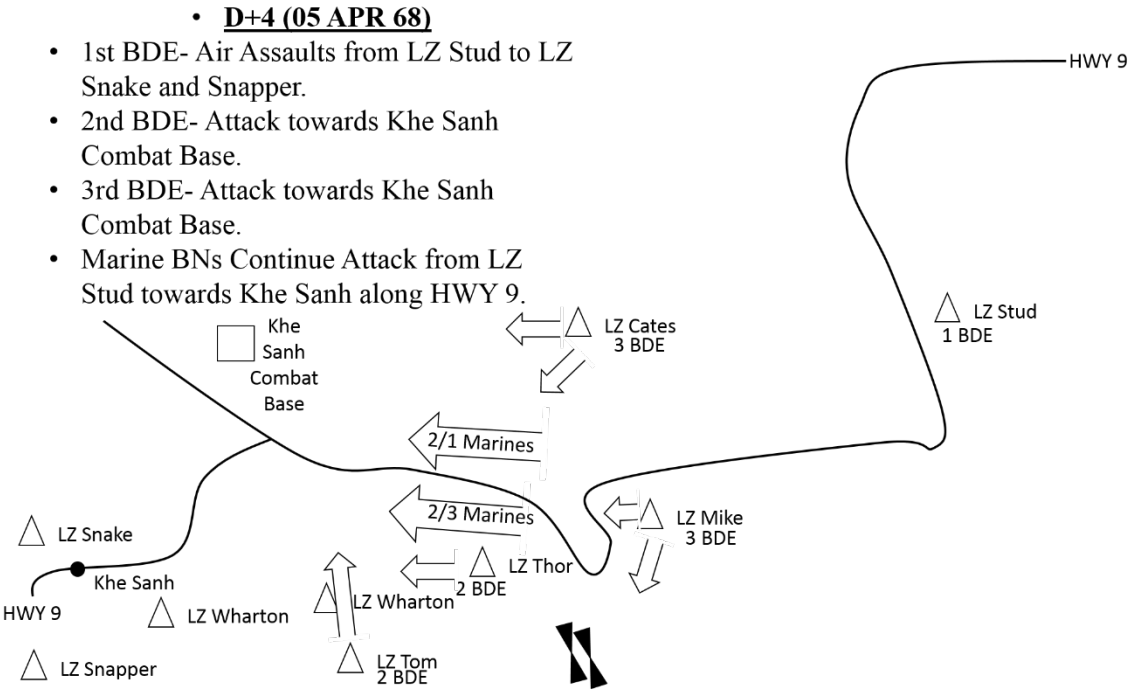

Figure 6. 1st Brigade Air Assault on April 5, 1968

Source: Created by author and derived of information from Willard Pearson, *Vietnam Studies: The War in the Northern Provinces 1966-1968* (Washington, DC: Government Printing Offices, 1975) MAP 13; 1st Cavalry Division, Combat Operations After Action Report Operation Pegasus/LAM SON 207A Search and Clear (Washington, DC: Department of the Army, 1968), 6.